IN THE CLAIMS:

Claim 1 (cancelled)

2.   (currently amended) A method according to claim [[1]] 25, wherein the first axis and second [[axes]] axis are orthogonal.

3.   (currently amended) A method according to claim [[1]] 25, wherein the at least three alignment beams of monochromatic light are parallel.

4.   (currently amended) A method according to claim [[1]] 25, wherein the detectors are arranged such that tilting the optical element about the first axis does not affect the relative phase of components of each of the beams directed towards a first pair of the detectors and tilting the optical element about the second axis does not affect the relative phase of components of each of the beams directed towards the second pair of detectors, the second estimates of aligned element positions being derived by determining second element positions at which the phase differences between beams instant on each of the pairs of detectors are a minimum.

5.   (currently amended) A method according to claim [[1]] 25, wherein deriving [[said]] the first element position is derived by includes calculating element positions from [[the]] outputs of each of the detectors such that each said calculated element position corresponds to the position at which the magnitude of the beam incident on the respective detector is a maximum, and determining the first element position by combining the calculated element positions to determine the first element position.

6.   (currently amended) A method according to claim [[1]] 25, comprising three detectors, one detector being included in each of the first and second pairs of detectors.

7.   (original) A method according to claim 6, wherein four detectors are provided.

8.   (currently amended) A method according to claim [[1]] 25, wherein after a set of second element positions is determined, and the element is aligned by moving it to the second position which is closest to the first element position.

9.   (currently amended) A method according to claim [[1]] 25, wherein after a

set of second element positions is determined, and the optical element is moved to each of the set of second element positions in turn, the magnitude of an output of at least one of the detectors is monitored at each position, and the optical element is moved to the second element position at which the monitored magnitude is a maximum.

10.   (currently amended)   A method according to claim [[1]] 25, wherein the optical element is a mirror.

11.   (currently amended)   A method according to claim [[1]] 25, wherein the optical element is tilted by a plurality of actuators each of which is aligned with [[a]] one of said respective detectors.

12.   (currently amended)   An apparatus for aligning an optical element of an optical interferometer in which a beam of light interacts with the optical element and the optical element is tilted about first and second axes to adjust the relative phases of components of the beam, comprising

means for directing at least three alignment beams of monochromatic light through the optical interferometer towards respective detectors, the detectors being arranged in pairs such that where tilting the optical element about [[the]] a first axis affects [[the]] a relative phase of components of each of the alignment beams directed towards a first pair of detectors in a predetermined manner, and tilting the optical element about [[the]] a second axis affects [[the]] a relative phase of components of each of the alignment beams directed towards a second pair of detectors in a predetermined manner[[,]];

means for deriving a first estimate of an aligned optical element position by determining from an output of at least one detector a first element position at which [[the]] a magnitude of the beam incident on [[that]] the at least one detector is a maximum[[,]] ;

means for deriving second estimates of aligned element positions by determining second element positions at which predetermined phase differences between the at least three alignment beams incident on each of the pairs of detectors are established[[,]] ; and

means for aligning the optical element by moving it to a final position which is

one of the second positions which is at or adjacent the first position.

13.   (currently amended) An apparatus according to claim 12, wherein the first axis and second [[axes]] axis are orthogonal.

14.   (currently amended) An apparatus according to claim 12, wherein the at least three alignment beams are parallel.

15.   (original) An apparatus according to claim 12, wherein the detectors are arranged such that tilting the optical element about the first axis does not affect the relative phase of components of each of the beams directed towards a first pair of the detectors and tilting the optical element about the second axis does not affect the relative phase of components of each of the beams directed towards the second pair of detectors, means being provided to derive the second estimates of aligned element positions by determining second element positions at which the phase differences between beams incident on each of the pairs of detectors are a minimum.

16.   (original) An apparatus according to claim 12, wherein the optical element is a tiltable mirror.

17.   (currently amended)   An apparatus according to claim 16, wherein a further an additional mirror is positioned adjacent to and at an angle to the tiltable mirror and a beam splitter is positioned between the mirrors additional mirror and the tiltable mirror [[such that]] so components of the at least three alignment beams are transmitted through the beam splitter, reflected by one of the mirrors additional mirror and the tiltable mirror, and reflected again by the beam splitter to the detectors, and components of the at least three alignment beams are reflected by the beam splitter, reflected by the other mirror of the additional mirror and the tiltable mirror, and transmitted through the beam splitter to the detector.

18.   (currently amended)   An apparatus according to claim 17, wherein the mirrors additional mirror and the tiltable mirror are orthogonal.

19.   (currently amended) An apparatus according to claim 12, wherein the optical element is mounted on actuators, each of which is aligned with a respective detector.

20.   (currently amended) An apparatus according to claim 12, [[comprising]] further including means for calculating element positions from the outputs of each of the

detectors such that each <u>said</u> calculated element position corresponds to the position at which the magnitude of [[the]] <u>a</u> beam incident on the respective detector is a maximum, and

means for determining the first element position by combining the calculated element positions.

21.   (original) An apparatus according to claim 12, comprising three detectors are provided, one detector being included in each of the first and second pairs of detectors.

22.   (original) An apparatus according to claim 21, wherein four detectors are provided.

23.   (currently amended) An apparatus according to claim 12, ~~comprising~~ <u>further including</u> means for determining a set of second element positions, and

means for moving the <u>optical</u> element to the second position which is closest to the first element position.

24.   (currently amended) An apparatus according to claim 12, ~~comprising~~ <u>further including</u> means for determining a set of second element positions, [[and]]

means for moving the <u>optical</u> element to each of the set of second element positions in turn,

means for monitoring the magnitude of an output of at least one of the detectors at each <u>of the set of second element</u> position<u>s</u>, and

means for moving the <u>optical</u> element to the second element position at which the monitored magnitude is a maximum.

25. (new) A method for aligning an optical element of an optical interferometer, comprising:

directing at least three alignment beams of monochromatic light through respective detectors, the detectors being arranged in pairs such that tilting the optical element about a first axis affects a relative phase of components of each of the beams directed toward a first pair of detectors in a predetermined manner and tilting the optical element about the second axis affects the relative phase of components of each of the beams directed towards the second pair of detectors in a predetermined manner;

deriving a first estimate of an aligned optical element position by determining from an output of at least one detector a first element position at which a magnitude of the beam incident on that detector is a maximum;

deriving second estimates of aligned element positions by determining second element positions at which predetermined phase differences between beams incident on each of the pairs of detectors are established; and

aligning the optical element by moving the optical element to a final position which is one of the second positions that is at or adjacent the first position

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